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VARIOUS.

PROCESS FOR HARDENING ZINC.

Messrs. Boignol, Farjon, and Delpierre harden zinc by pouring into the metal, while in a state of fusion, a proportion of sal ammoniac varying from $3^{1}/_{2}$ to 7 oz. per kilogramme (2·2 lbs.), according to the degree of hardness desired. Metal thus prepared can be worked with the file and the turning lathe, and may with advantage serve as a substitute for bronze in many cases.

Moniteur Industriel Belge.

A GOOD PROCESS FOR TINNING IRON.

Herr Hass recommends the following method of tinning wrought or cast iron. After the iron article has been filed, polished, and turned, clean it dry, and, while employing an electric current, dip it in a bath consisting of $3^{1}/_{2}$ oz. of solution of tin 40° Beaumé, 35 oz. of spring water, and 7 oz. of caustic potash lye 33° Beaumé. In this bath the iron article must remain till sufficient tin has settled upon it. The tin is deposited of a dull grey colour, but receives a bright polish on being rubbed with a cloth. It is polished at any time with whitening and wash leather.

Bayerisches Industrie- und Gewerbe-Blatt.

A GOLD-LIKE ALLOY.

A gold-like alloy of fine grain, which is malleable, admits of a high polish, and does not rust in the air, may be obtained by fusing together 100 parts of pure copper, 17 of tin, 6 of magnesia, 3·6 of sal-ammoniac, 1·8 of quick-lime, and 9 of tartar. The copper should be melted first, and magnesia, sal-ammoniac, lime, and tartar gradually added in small quantities. After this the tin should be put into the crucible in small quantities, and the whole kept in a fluid state for 35 minutes, after which the mass may be left to cool.

Gewerbehalle.

A WHITE UN-OXIDISING ALLOY.

M. Marlie obtains a white un-oxidising alloy from 10 parts of iron, 35 of nickel, 25 of brass, 20 of tin, and 10 of zinc. Articles made of this alloy are plunged white-hot into a mixture of 6 parts of sulphuric acid, 10 of nitric acid, 5 of muriatic acid, and 28 of water.

Gewerbehalle.

THE CITY OF MEXICO AT THE PHILADELPHIA EXHIBITION.

One of the most curious things at the Philadelphia Exposition will be an architectural plan of the city of Mexico. Its dimensions are 330 ft. by 231 ft. It will display all the characteristics of the city, and will be peopled by 60,000 leaden figures dressed in appropriate costumes, some for the opera, ball and social party, and others vending fruit and ice-cream, carrying baskets, and rolling barrels. In the streets will be 1900 coaches, an equal number of other vehicles and a lot of artillery pieces.

The Engineer.

MEERSCHAUM WASTE.

Meerschaum shavings or dust is used when compressed for making inferior or imitation pipes. 41,000 cwt. of this waste are annually consumed in Vienna in the production of pipes, cigar-holders &c., and the imitation has been carried to such perfection that connoisseurs sometimes find it difficult to distinguish these articles from similar ones of the genuine substance. Of the meerschaum itself 12,000 cases, each weighing 50 lb. or 60 lb. and worth £ 35 a case, are used up in Vienna alone. In working up the shavings and dust into material about sixty women are employed in Vienna, in sorting, sifting, washing, and cleaning the refuse, and rubbing it through silken sieves.

The Engineer.

ICE RINK.

Asphalte, pine flooring, "patent ice", and all other substitutes for the real thing in skating rinks, must give way before the newly-invented ice rink of Professor John Gamgee, of Chelsea, if all be true that is said about it. He is declared to have succeeded in his attempts to manufacture by artificial means a perfect sheet of solid ice, which can be maintained constantly so as to bear skaters all day and all night long, if necessary. The ice is produced from below by a refrigerating machine, and the members of the London Skating Club who have skated on the rink already formed pronounce it to be the hardest and best they have ever tried. A very extensive rink can be maintained, it is alleged, with a consumption of about 56 lb. of coal per hour. It is claimed for the ice produced by this method of Professor Gamgee's that it has no tendency to produce cold injurious to the feet, but that it dries the warm air above, without producing an unpleasant or even an appreciable sensation of cold. We are curious to see how the patentees of the roller skates will welcome Professor Gamgee's invention.

The Building News.

THE CONSERVATIVE SASH FASTENER.

Messrs. Hobbs, Hart & Co. are now manufacturing a sash fastener, called the "Conservative", which is the invention of Mr. T. C. Sorby, and has several advantages. It is simple in construction, cannot easily be put out of order and is self-acting. Moreover it admits of leaving the windows open to a fixed limit day and night for ventilation, at the same time ensuring safety, and it can be applied to meeting rails at any height above the floor and worked from any convenient position. The movement can also be carried under, over, or through desks or other obstacles, so that double-hung sashes can be opened or closed with ease by the use of suitable cords. The fastener consists of a spring latch, the bolt of which shoots into a rack with two or more notches, the upper ones for fixing the sashes open for ventilation, the lower one for securing the sashes when closed. The bolt is drawn back by a rod or cord passing down the face of the lower sash, finishing with a catch at any required height; this is released by a touch of the finger, and the act of closing the sash secures them.

Mr. Sorby has invented a self-adjusting blind-cord holder, which can also be obtained of Messrs. Hobbs, Hart & Co., which is one of the best we have ever seen.

The Building News.

USEFUL RECIPES.

A new compound for polishing and cleaning metals is composed of 1 oz. of carbonate of ammonia dissolved in 4 ozs. water; with this mixed 16 ozs., Paris white. A moistened sponge is dipped in this powder, and rubbed lightly over the surface of the metal, after which the powder is dusted off, leaving a fine brilliant lustre.

A new alloy for bell metal is proposed, which does not tarnish, is less liable to crack, gives a better sound, and is much lighter in weight than the alloy usually employed for the purpose. It is prepared as follows, nickel 1 lb. and copper 6 lbs., are melted and cooled. Add zinc 2 lbs., aluminium $^{1}/_{2}$ oz., melt and cool. Melt again, and finally add $^{1}/_{2}$ oz. quicksilver and 6 lbs. melted copper.

A very beautiful application of electro-metallurgy is to apply a coat of silver by electro-deposition, on natural leaves and flowers. By this means very delicate ornaments are produced, since the precise form and texture of the natural leaf are produced under the clear silver film.

To stick leather, paper, or wood to metal, to a gill of glue dissolved in water add a tablespoonful of glycerin.

Scientific American.